Buffer Pool And Recovery Files

This section describes maintenance functions you can perform on the Editor buffer pool and user recovery files. These refer to the BPSTAT, BP FILES and BP RECS options on the Administrator Menu.

With Natural Version 2.2.6 and higher, the Software AG Editor is an integral part of Natural and replaces any previous Software AG Editor versions. A new Natural utility called SYSEDT is provided which offers Editor buffer pool services. It is strongly recommended that you use SYSEDT to obtain information concerning the Editor buffer pool status.

The functions described in the following subsections are still supported in Natural ISPF version 2.3.1 for compatibility reasons. Future versions may no longer support this functionality.

This section covers the following topics:

- Buffer Pool
- Recovery Files
- Troubleshooting

Buffer Pool

The following description is not intended to give full technical details on the buffer pool, but provides a rough outline of its function.

The buffer pool software enables you to allocate space to which users perform read and write operations.

The buffer pool consists of area in the memory and a container file. The area is divided into memory blocks of fixed length. The buffer pool manager reads blocks from the memory and writes blocks to it. If the buffer pool is full, it tries to release other blocks by writing them to the container file. In the normal case, however, most blocks in use will be in the memory.

Buffer Pool Maintenance

The BPSTAT option on the Administrator Menu (or the BPSTAT session command) invokes the SYSEDT utility.

Optimizing the Buffer Pool

Optimizing the buffer pool means modifying certain parameters to increase buffer pool efficiency. The parameters are described below. To modify a parameter, use the Natural utility SYSEDT or refer to the section **Installing the SAG Editor** in the **Natural Operations Documentation**.

Buffer Pool Length

If your system has sufficient free memory, it is recommended that you increase the buffer pool length. If there is a high volume of physical read and write operations, increasing the buffer pool length decreases the I/O.

Delete File Timeout

If the buffer pool fills regularly, you can increase the number of physical blocks. If the buffer pool still fills regularly, you can decrease the delete file timeout value (the default is 24 hours). This means that user buffer pool files are automatically deleted after a shorter period of time. This may affect users who leave their terminals disconnected for longer periods of time, as their sessions will be lost.

You can change the parameter manually in the buffer pool statistics table with the BPSTAT session command. The new value then remains valid until the buffer pool is restarted.

Unchanged Blocks Timeout

If a high volume of I/O operations is taking place (that is, the efficiency of the buffer pool is low), and the buffer pool has 400 K or more, increase the unchanged blocks timeout value. This will cause unchanged blocks that are not used within the specified period to remain in the buffer pool for a longer period.

You can change the parameter manually in the buffer pool statistics table with the BPSTAT session command. The new value then remains valid until the buffer pool is restarted.

Changed Blocks Timeout

If a high volume of I/O operations is taking place (that is, the efficiency is low), and the buffer pool has 400 K or more, increase the changed blocks timeout value. This will cause changed blocks that are not used within the specified period to remain in the buffer pool for a longer period.

You can change the parameter manually in the buffer pool statistics table with the BPSTAT session command. The new value then remains valid until the buffer pool is restarted.

Buffer Pool Files

The BP FILES option on the Administrator Menu lists all Editor buffer pool files in the following format:

```
LIST-BPF: ----------------------------------- Row 0 of 60 - Columns 006 050
   COMMAND===>                                                  SCROLL===> CSR
     FILE        USER     SES  BLOCKS   IN MEM TIMEOUT
 ** ***************** top of list *****************
     1           LHU        4       6        0    3017
     2           GPA       40       3        0    8231
     3           DWI       50       1        0      28
     4           DWI       46       1        0      25
     5           JWI        1       1        0    5486
     6           GW        40       3        3     197
     7           HE         1       1        0       2
     8           MBE       40       4        0    6822
     9           DWI        4       4        0    1952
    10           HBR       40       3        0    8131
    11           GW         1       8        0    1492
    12           SAGDML    40       7        0    7994
    13           JWI        2       6        0    5439
    14           SAGDML     1       5        0    7965
    15           SAGDML     2       7        0    4806
    16           SAGDML     3       0        0    4573
    17           UDA1       2       0        0    3351
    18           GPA        1       4        3      21
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help  Split End   Suspe Rfind Rchan Up    Down  Swap  Left  Right Curso
```

Meaning of the column headings:

Column	Meaning
FILE	Logical file in buffer pool.
USER	User to whom the logical file is currently allocated.
SES	Editor session number.
BLOCKS	File size in blocks.
IN MEM	Number of blocks in memory.
TIMEOUT	Timeout value for the file in seconds.

You can select any file for deletion by entering the **D** line command in the input field preceding the file number.

> **Note:**
> It is recommended that you delete only **unused** sessions. If you delete a buffer pool file for an Editor session that is in use, the results of the Editor session are unpredictable. (Typically, the user will receive the message: Session does not exist).

The buffer pool files display is a separate object within Natural ISPF. This means you can invoke the above display directly using a function command from a Natural ISPF session. You must address the object type BPF in the command syntax:

```
LIST BPF
```

Recovery Files

Recovery files are checkpoints which are written during an edit session and deleted when the edit session is terminated normally. If the edit session is terminated abnormally, the checkpoint files are stored in the Editor workfile indefinitely or until the user selects the file for recovery.

If you select the BP RECS option on the Administrator Menu, a the recovery files for all users are listed:

```
LIST-BPR: ------------------------------------ Row 0 of 85 - Columns 016 076
   COMMAND===>                                                  SCROLL===> CSR
     USER      BLOCK        DATE      TYPE OBJECT-IDENTIFICATION
  ** ****************************** top of list ******************************
     DMR       00001        94/11/14 PDS  DMR.CPS.JCL(INPL22)
     JWO       00007        94/11/25 NAT  NSPF151(TEST1)
     SDE       00014        94/11/30 PDS  SDE.JCL(COPYLM)
     MSP       00019        94/10/31 PDS  RZDBA.DB044.JCL(SISULD27)
     SAGAWW    00025        94/11/03 PDS  COM.SYSF.SAGAWW.SOURCE(VSAMREPR)
     GW        00028        94/12/08 PDS  EDZ.EDZ111.CNTL(TAPIEDZ)
     SDE       00029        94/12/05 PDS  ESQ.SOURCE(#ASL)
     WRA       00031        94/11/15 SEQ  WRA.MIGRATE
     GW        00035        94/12/08 NAT  NOMPUT(TDISNP)
     KOR       00038        94/11/21 PDS  KOR.SYSF.SOURCE(Z4410884)
     HGS       00040        94/11/21 PDS  HDOSIS.COMMON.BS2TXT(N206003)
     SAGAWW    00052        94/12/02 PDS  COM.SYSF.V46.ZAPS(CP46DOC)
     KSP       00056        94/11/25 PDS  KSP.SYSA.SOURCE(COBS4)
     MSP       00058        94/11/01 PDS  RZDBA.DB044.JCL(SISULDSP)
     DMR       00076        94/11/03 PDS  DMR.CPS.JCL(BAT226X)
     BBU       00082        94/11/04 PDS  BBU.SYSF.JCL(NATBAT7)
     SAGAWW    00088        94/11/08 PDS  COM.SYSF.SAGAWW.SOURCE(ZAP)
     HDB       00095        94/11/03 PDS  HDB.ESS111.JOB(I080COM)
  Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
       Help  Split End   Suspe Rfind Rchan Up    Down  Swap  Left  Right Curso
```

Meaning of the column headings:

Column	Meaning
USER	User ID of owner.
BLOCK	Internal block number.
DATE	Date of last checkpoint.
TYPE	File type.
OBJECT-IDENTIFICATION	The appropriate object identification is listed here depending on the file type. For example, for Natural objects: library(member).

You can delete any recovery file by issuing the **D** line command from the input field preceding the user ID.

Recovery files are separate objects within Natural ISPF. This means you can invoke a list of recovery files using a function command from an Natural ISPF session. You must address the object type BPR in the command syntax:

```
LIST BPR
```

Troubleshooting

This subsection lists messages that may appear in the message line of a Natural ISPF screen concerning the Editor buffer pool. Related messages are grouped together, and corrective action is suggested.

Installation Errors

Message:

```
SSIZE too small
```

Explanation / Action:

Modify your NATPARM module using SSIZE=64.

Message:

```
DBID of Natural PROCESS is missing
```

Explanation / Action:

The DBID of Entire System Server (formerly Natural Process) is missing in the Natural ISPF configuration. See the Section System Configuration.

Messages:

```
Checkpoint file not active'
  -caution-  profile changed to "recovery off" (from "recovery on") because checkpoint file not
  active' (in Editor session)
```

Explanation / Action:

The Editor workfile was not formatted correctly, no space was reserved for the checkpoint file. Check your job that allocates the workfile.

Message:

```
Failure in open Buffers
```

Explanation / Action:

The allocation of the Editor area failed or was not sufficient (SSIZE buffer). Check the SSIZE parameter. If the parameter has a value of at least 64, you can either increase the MSIZE parameter, or decrease the size value of other buffers you do not need, for example CSIZE, FSIZE or TSIZE (see the **Natural Administrator Documentation**). In some environments, you can use the Natural command SYSBUS to check the allocations in effect.

Message:

```
BP not active
```

Explanation / Action:

The buffer pool was not initialized correctly. See the section **Installing the SAG Editor** in the **Natural Operations Documentation**.

Editor Workfile and Timeout Parameters

Messages:

```
Checkpoint of file failed
  No space for data block
  No space for index block
  Cannot allocate BP file
  -caution-  profile changed to "recovery off" (from "recovery on") because checkpoint file is
  full (in Editor session)
  -caution-  profile changed to "log off" (from "log on") because log file is full (undo command
  not active) (in Editor session)
  Cannot allocate BP block
  Cannot allocate checkpoint block
  Suspending of a session failed
```

Explanation / Action:

These messages indicate that the Editor workfile is too small or the timeout parameters are too large, causing data to be kept in the buffer pool too long. You must increase the workfile size or decrease the timeout parameters.

Message:

```
Activation of a session failed
```

Explanation / Action:

The session has been deleted due to a buffer pool timeout. Restart the session.

Internal ISPF/Editor Problems

The following messages are not usually displayed. They appear in the rare case of some internal problem.

Messages:

```
Some data may be ignored
  Session does not exist
  Cannot free BP block
  Log error
```

Explanation / Action:

Contact your Software AG support representative.

I/O Problems on Editor Workfile or Volume

Messages:

```
I/O ERROR
  Cannot read index block
  Write to BP failed
  Read from BP failed
  Read failed
  Error reading log block
  Cannot read checkpoint block
  Cannot write checkpoint block
  Recovery of file failed
```

Explanation / Action:

Check the workfile. If the error persists, reallocate the file on another volume.

Other Inconsistencies

Message:

```
Error in getting lines
```

Explanation / Action:

The Natural source area is corrupted, for example if Natural ISPF is aborted by **%%** and the source area was modified.

Message:

```
Getting text failed
```

Explanation / Action:

The Editor message table is inconsistent.

Message:

```
Invalid printer reference number
```

Explanation / Action:

The requested printer has no corresponding definition in the NATPARM module. Note that with PRINTER=OFF in the NATPARM module, the WORKPOOL, BROWSE-VIEW and COMPARE functionality is disabled.